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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,972	03/02/2004	Steven Schkolne	10758-65	3695

30076 7590 05/24/2006

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EXAMINER	
LAY, MICHELLE K	

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/791,972	SCHKOLNE ET AL.	
	Examiner	Art Unit	
	Michelle K. Lay	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *163-198* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *163-198* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed 03/09/2006 has been entered and made of record. Claims 163-198 are pending. Claims 1-162 have been cancelled.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. Additionally, in regards to Pryor (2002/0036617 A1), Applicant argues Pryor fails to teach a method of for manipulating a virtual object with a virtual interface component. However, the method/system of Pryor allows the user to manipulate virtual objects via an input device that is mapped accordingly so as on screen, the virtual object is being manipulated. Furthermore, the input device of Pryor does not need to be represented within the graphical user interface as the physical features of the device but rather, can take an entirely different appearance depending on the user's preference, thus being a virtual input device. Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices, or also using the users own hands as input devices. The program of computer (630) recognizes this motion of fingernails (635) and (636) seen by cameras (640) and (641) connected to the computer which processes their image according to the manipulation [0334].

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims **163**, **164**, **170**, **171**, **173**, **174**, **177**, **178**, **183**, **188**, **189**, **194-196** are rejected under 35 U.S.C. 102(b) as being anticipated by Pryor (2002/0036617 A1).

Pryor teaches a method and apparatus for inputting position, attitude (orientation) or other object characteristic data to computers for the purpose of Computer Aided learning, Teaching, Gaming, Toys, Simulations, Aids to the disabled, Word Processing and other applications.

In regards to claims **163**, **173**, **174**, **177**, **188**, **195**, **196** –

Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object (6) represented electronically on the screen (7) and cause the pointing action to register in the software contained in computer (8) with respect to that object (a virtual object), in order to cause a signal to be generated to the display (7) to cause the object to activate or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (said ***generating one or more interface devices to alter and generate one or more two-dimensional or three-dimensional virtual objects***) [0109]. This system can provide highly accurate position and orientation information in up to 6 degrees of freedom (said ***wherein said devices can control N degrees of freedom of said virtual objects***;

claim 161: ***wherein N degrees of freedom is 6 degrees of freedom***) [0134]. Furthermore, the invention of Pryor can "alias" the interface devices, such as represent the input device, such as a pen, as a paintbrush on the screen (7) (said ***providing one or more three-dimensional virtual tools to a user for said spatial manipulation or said two-dimensional or said three-dimensional entertainment***) [0275]. Fig. 9 illustrates a means for aiding the movement of a person's hands while using the invention of Pryor in multiple degrees of freedom movement. Shown in Fig. 9a, joystick (905) has ball (910) attached to it's end in which the data from datums on the ball position is taken optically by a video camera in up to 6-axes [0382]. Two joysticks may be used (said ***generating one or more interface devices; associating said interface devices in conjunction with each other to alter one or more two-dimensional or three-dimensional virtual components***) [0383].

In regards to claims **164**, **178**, **189** –

The datums on an object can be known a priori relative to other points on the object, and to other datums, by providing it to a user via a CD ROM disc or other computer interface storage medium having this data [0143] (said ***virtual components are a software representation of physical input devices***).

In regards to claims **170**, **183**, **194** –

Referring to Fig. 3, Pryor uses the example of an artist with tools, such as an eraser (said ***3D virtual tool is an eraser tool, wherein said tool is used to remove a region***

of a virtual surface) [0274]. The artist would pick up the tool and normally use the tool over the surface of a sheet of paper, display screen or projection of computer display. The application software would not only trace the path of the tip of the targeted work too, but also treat the tool as though it were the object, i.e. eraser.

In regards to claim **171** –

Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp (said ***grab***), stretch, bend, twist, rotate, screw, point, hammer, throw (said ***move***), and other natural actions learned in life [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (said ***using two or more of said physical input devices coincidentally***), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing, while the second hand performs a second action, such as lengthening.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **167-169**, **172**, **175**, **176**, **180-182**, **184-186**, **191-193**, **197**, and **198** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

In regards to claims **167**, **168**, **180**, **181**, **191**, **192** –

Pryor teaches the limitations of claims **167**, **168**, **180**, **181**, **191**, **192** with the exception of disclosing an input device to cut a virtual object. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend (said ***bend virtual objects***), twist, rotate, screw, point, hammer, throw, and other natural actions learned in life [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (said ***using two or more of said physical input devices coincidentally***), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing, while the second hand performs a second action, such as lengthening.

Additionally, as shown in Fig. 15, a sword video game can incorporate the method of Pryor. It would have been obvious to one skilled in the art that the sword (1502) held by player (1501) can virtually cut the "bad guys" within the game [0441]-[0442].

Furthermore, Pryor teaches that the invention allows the user to "alias" any object with any other object [0281]. Thus, the hands of the user can be aliased as a sword that can cut the virtual objects (said ***cut virtual objects***).

In regards to claims **169**, **182**, **193** –

Pryor teaches the limitations of claims **169**, **182**, **193** with the exception of disclosing the grabbing tools, pointing tools, and gripping tools resembling specific physical forms. However, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices.

With the aid of Fig. 6, Pryor teaches the act of grabbing where the thumb (601) and the first finger (602) are near an object such as a 3D graphic rendition of a cow (610) displayed on the screen (615). As the fingers are converged in a pinching motion depicted as dotted lines (620), the program of computer (630) recognizes this motion of fingernails (635) and (636) seen by cameras (640) and (641) connected to the computer which processes their image, as a pinch/grasp motion and can either cause the image of the cow to be compressed graphically [0334]. Although Pryor is silent about other grabbing tools, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices. Therefore, such material can be adhered to kitchen tongs, pincers, scissors, and or tweezers that mimic the same pinching motion as the thumb (601) and first finger (602).

Parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility, such as pointing [0331]. This action can cause

objects depicted on a screen to be acted on, by sensing [0334]. Thus, similar to the grabbing tools, the retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a flash light, spray-paint can or camera to mimic the same pointing motion as the user's finger (said ***spray can***).

These tools can be considered targeted tools, where a targeted work tool can be a toy model of the real world tool or the tool itself, helping the user immediately visualize the properties of the tool in the computer program [0236]. Thus, it would have been obvious to use such physical items in order to provide a realistic simulation of the users motion in regards to the graphic rendition on the screen (615).

In regards to claims **172**, **175**, **176**, **197**, **198** –

Pryor teaches the limitations of claim **172**, **175**, **176**, **197**, **198** with the exception of modifying an axis of rotation. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend, twist, rotate (said ***rotate said virtual object***), screw, point, hammer, throw, and other natural actions learned in life (said ***using tools to move virtual component to a desired location***) [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands, or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as

grabbing (said ***grabbing with said first grabbing tool***), while the second hand performs a second action, such as rotating (said ***rotating with grabbing tool***). Although Pryor is silent about an axis of rotation, and axis of rotation would be needed for the user to rotate the virtual object. Furthermore, the invention of Pryor permits the virtual object to be moved or altered in position. Thus, when the virtual object's position has been altered, either rotated a certain degree, etc., the axis of rotation as then been modified (said ***modify an axis of rotation***).

In regards to claims **184-186** –

Pryor teaches the limitations of claim **184-186** with the exception of a closed curve. However, Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object (6) represented electronically on the screen (7) and cause the pointing action to register in the software contained in computer (8) with respect to that object (a virtual object), in order to cause a signal to be generated to the display (7) to cause the object to activate or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (said ***generating one or more interface devices to alter and generate one or more two-dimensional or three-dimensional virtual objects***) [0109]. This system can provide highly accurate position and orientation information in up to 6 degrees of freedom [0134]. Furthermore, the invention of Pryor can "alias" the interface devices, such as represent the input device, such as a pen, as a paintbrush on the screen (7) (said ***providing one or more three-dimensional virtual tools to a user for said spatial manipulation or said two-dimensional or said three-dimensional***

entertainment) [0275]. Fig. 9 illustrates a means for aiding the movement of a person's hands while using the invention of Pryor in multiple degrees of freedom movement.

Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend (said ***bend***), twist, rotate (said ***rotate***), screw, point, hammer, throw, and other natural actions learned in life [0331]. Although Pryor is silent about other grabbing tools, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices. Therefore, such material can be adhered to kitchen tongs, pincers, scissors, and or tweezers that mimic the same pinching motion as the thumb (601) and first finger (602).

Parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility, such as pointing (said ***point***) [0331]. This action can cause objects depicted on a screen to be acted on, by sensing [0334]. Thus, similar to the grabbing tools, the retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a flash light, spray-paint can or camera to mimic the same pointing motion as the user's finger.

These tools can be considered targeted tools, where a targeted work tool can be a toy model of the real world tool or the tool itself, helping the user immediately visualize the properties of the tool in the computer program [0236]. Thus, it would have been obvious to use such physical items in order to provide a realistic simulation of the users motion in regards to the graphic rendition on the screen (615).

Although Pryor does not explicitly teach a closed curve, it is would have been obvious to one of ordinary skill in the art that the method and system of Pryor would allow such a motion to occur since the method and system of Pryor mimics some natural actions such as bending and other natural actions learned in life [0331]. Therefore, with such a bending motion, the virtual object can be bent to a closed curve. Furthermore, although not explicitly taught, it would have been implicit that if the curve is bent closed, a volume is generated.

In regards to claim **187** –

Pryor teaches the limitations of claim **187** with the exception of molecule components. However, Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object (6) represented electronically on the screen (7) and cause the pointing action to register in the software contained in computer (8) with respect to that object (a virtual object), in order to cause a signal to be generated to the display (7) to cause the object to activate or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (said ***generating one or more interface devices to alter and generate one or more two-dimensional or three-dimensional virtual objects***) [0109]. This system can provide highly accurate position and orientation information in up to 6 degrees of freedom [0134]. Furthermore, the invention of Pryor can "alias" the interface devices, such as represent the input device, such as a pen, as a paintbrush on the screen (7) (said ***providing one or more three-dimensional virtual tools to a user for said spatial manipulation or said two-dimensional or said three-dimensional***

entertainment) [0275]. Fig. 9 illustrates a means for aiding the movement of a person's hands while using the invention of Pryor in multiple degrees of freedom movement.

Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend (said ***bend***), twist, rotate, screw, point, hammer, throw, and other natural actions learned in life [0331]. Although Pryor is silent about other grabbing tools, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices. Therefore, such material can be adhered to kitchen tongs, pincers, scissors, and or tweezers that mimic the same pinching motion as the thumb (601) and first finger (602).

Parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility, such as pointing (said ***point***) [0331]. This action can cause objects depicted on a screen to be acted on, by sensing [0334]. Thus, similar to the grabbing tools, the retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a flash light, spray-paint can or camera to mimic the same pointing motion as the user's finger. Additionally, as shown in Fig. 15, a sword video game can incorporate the method of Pryor. It would have been obvious to one skilled in the art that the sword (1502) held by player (1501) can perform the act of cutting [0441]-[0442]. Furthermore, Pryor teaches that the invention allows the user to "alias" any object with any other object [0281]. Thus, the hands of the user can be aliased as a sword that can cut the virtual objects (said ***cut virtual objects***).

These tools can be considered targeted tools, where a targeted work tool can be a toy model of the real world tool or the tool itself, helping the user immediately visualize the properties of the tool in the computer program [0236]. Thus, it would have been obvious to use such physical items in order to provide a realistic simulation of the users motion in regards to the graphic rendition on the screen (615).

Although Pryor does not explicitly disclose molecule components, the virtual objects of Pryor are manipulated where the user can cut (i.e. break bonds), move, rotate and draw. The molecule components of the current application are used as virtual objects within the graphical user interface, and thus regardless of the appearance of the virtual objects, they are being manipulated in the same fashion as the virtual objects of Pryor.

3. Claim **165** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1) in view of Harvill et al. (US Patent No. 6,222,523 B1).

Pryor teaches the limitation of claim **165** with the exception of teaching the virtual component coinciding with the tool's physical form. However, Harvill et al. attaching a tactile stimulus to the users body when a virtual operator, created by movements of the physical operator, encounters a virtual object defined by a computer.

Referring to Fig. 6 of Pryor, Fig. 6 illustrates other movements such as gripping or touching. Parts of the user such as the hands, can describe motion or position signatures and sequence of considerable utility, e.g., grip, pinch, grasp, stretch, bend,

twist, rotate, screw, point, hammer, throw [0331]. These actions can cause objects depicted on a screen to be acted on, by sensing the users hand relative to the human or the computer camera system or the screen [0333].

Fig. 1 of Harvill et al. is an overall perspective view of a data processing system (4) wherein movements of a part of a physical body (10) of an operator (12) are converted into a virtual operator (16) (said ***virtual form of said tool is an iconic virtual component***) for manipulating a virtual object (20) represented within data processing system (4) [col. 2, lines 65 – 68; col. 3 lines 1 – 4]. As seen, the virtual operator (16) takes the form of the input device, i.e. the hand of the operator (10). As seen, the virtual form takes the shape of a 2D object. The movements of a hand (22) of physical operator (12) are converted into a virtual operator (16) through a glove (24). Thus, as the hand (22) moves, the virtual operator (16) mimics the movements on the display (said ***altering the relationship between said tool and its corresponding 3D virtual component***; ***mapping said tool to said corresponding virtual component***). It would have been obvious to one of ordinary skill in the art to have the virtual form also take a 3D shape since the data processing system (4) converts the movements of a physical body (10) of an operator (12) and the movements are within a 3D space. As shown in Fig. 2 of Harvill et al., a programmable interval timer (28) receives data from a CPU (32) of data processing system (4) through a bus (36). Internal timer 928) provides a signal to a stimulus circuit (40) through a bus (44) whenever virtual operator (16) encounters virtual object (20) [col. 3, lines 15 – 22]. Although Harvill et al. is silent about generating an iconic form when the virtual component is close enough to react with the virtual

objects, the virtual operator (16) reacts with the virtual object (20), thus altering it's state when near the virtual object (20).

Therefore, it would have been obvious to one of ordinary skill in the art to include the conversion method of Harvill et al. to display a virtual operator coinciding with the physical form of the input device of Pryor so the user can visually see the relationship between the input device and the virtual object on the screen, providing an easier means of manipulations of the virtual object on the screen.

4. Claims **166**, **179**, and **190** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (2002/0036617 A1) in view of Kumar et al (6,222,465 B1).

Pryor teaches the limitations of claims **166**, **179**, and **190** with the exception of disclosing smoothing or texturizing a portion of the virtual object. However Kumar teaches applying textures to the virtual objects.

When the user selects and executes the CHANGE CHARACTERISTIC command, the user can alter the colors, shininess types, and textures via the PALETTE (304) [col. 7, lines 15-41].

It would have been obvious to one of ordinary skill in the art to apply texturing as taught by Kumar to the virtual objects of Pryor in order to provide a more real world, or life like qualities to the user within the virtual environment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday through Thursday from 7:30am to 5:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee M. Tung, can be reached at (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle K. Lay
Patent Examiner
Division 2628
05.18.2006 mkl

PATENT EXAMINER

Kee M. Tung
Primary Examiner